



SLOVENSKI STANDARD
SIST ISO 3632-2:1997

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Žafran (*Crocus sativus* Linnaeus) - 2. del: Preskusne metode

Saffron (*Crocus sativus* Linnaeus) -- Part 2: Test methods

Safran (*Crocus sativus* Linnaeus) -- Partie 2: Méthodes d'essai

Ta slovenski standard je istoveten z: ISO 3632-2:1993

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INTERNATIONAL
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Saffron (*Crocus sativus* Linnaeus) —

Part 2:
Test methods

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Saffran (*Crocus sativus* Linnaeus) —

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Reference number
ISO 3632-2:1993(E)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 3632-2 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Subcommittee SC 7, *Spices and condiments*.

This first edition of ISO 3632-2, together with ISO 3632-1 cancels and replaces ISO 3632:1980, of which they constitute a technical revision.

ISO 3632 consists of the following parts, under the general title *Saffron* (*Crocus sativus Linnæus*):

- Part 1: *Specification*
- Part 2: *Test methods*

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Introduction

Since saffron is a costly spice, the general methods of testing spices are not always suitable because they require the use of large test portions. This is why it was decided to include in this part of ISO 3632 the test methods specific to saffron, when it is not possible to use the general standards.

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Saffron (*Crocus sativus* Linnaeus) —

Part 2: Test methods

1 Scope

This part of ISO 3632 describes methods suitable for testing the spice saffron, which is obtained from the flowers of the saffron crocus (*Crocus sativus* Linnaeus).

It is applicable to the testing of saffron in either of the following forms:

- in whole filaments as a loose, supple, elastic and hygroscopic mass of filaments, or
- in powder form.

NOTE 1 Specifications for saffron are given in ISO 3632-1.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 3632. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 3632 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 928:1980, *Spices and condiments — Determination of total ash*.

ISO 930:1980, *Spices and condiments — Determination of acid-insoluble ash*.

ISO 3632-1:1993, *Saffron (*Crocus sativus* Linnaeus) — Part 1: Specification*.

3 Definitions

For the purposes of this part of ISO 3632, the definitions given in ISO 3632-1 and the following definitions apply.

3.1 moisture and volatile matter content: Loss of mass determined under the conditions described. It is expressed as a percentage by mass of the sample.

3.2 colouring strength: Mainly due to its crocine content, it is defined by measurement of the optical density at the maximum, about 440 nm.

3.3 bitterness: Mainly due to its picrocrocine content, it is defined by measurement of the optical density at the maximum, about 257 nm.

3.4 flavour: Mainly due to its safranal content, it is defined by measurement of the optical density at the maximum, about 330 nm.

4 Preparation of test sample and order of tests

4.1 Minimum mass of test sample

IMPORTANT — In view of the high cost of saffron, the mass of sample received in the laboratories for carrying out the tests is often limited.

The minimum mass of the laboratory sample shall be 10 g (5 g × 2) so that it is possible to carry out all the usual analyses in duplicate.

Larger quantities of sample shall be placed at the disposal of the laboratories in case of any dispute, or if additional tests are required (e.g. nitrogen, crude fibre).

4.2 Procedure

4.2.1 Saffron in filaments

Carry out, **in the order indicated**, the tests and analyses according to the scheme given in table 1.

4.2.2 Saffron in powder form

Carry out, **in the order indicated**, the tests and analyses according to the scheme given in table 2.

5 Identification test

5.1 General

This preliminary test may make the subsequent chemical analyses unnecessary if it shows that the saffron is not pure.

5.2 Saffron in filaments

5.2.1 Principle

Visual examination with a magnifying glass.

5.2.2 Apparatus

5.2.2.1 Magnifying glass, with a magnification of $\times 10$ max.

Table 1 — Saffron in filaments: Order of test procedures

Order	Test procedure (sample: 5 g \times 2 = 10 g)	Test sample g	Comments
1	Identification test (clause 5)	5	Non-destructive test Reject sample if vegetable matter is found other than from <i>Crocus sativus</i> Linnaeus
2	Determination of floral waste content (clause 6)	3	Non-destructive test
3	Determination of extraneous matter (clause 7)	3	Sample is reconstituted after reincorporation of floral wastes
4	Regrouping and mixing of all the elements separated in tests (clauses 5 to 7)	5	Return to the original test sample of 5 g
5	Separation of test sample into sample A (3 g) and sample B (2 g)		
Sample A (3 g)			
6A	Determination of moisture and volatile matter content (clause 9)	2,5	Keep the sample for determination of total ash and acid-insoluble ash
7A	Determination of total ash (clause 10)	2 (approx.)	Sample remaining after 6A
8A	Determination of acid-insoluble ash (clause 11)		Sample remaining after 7A
Sample B (2 g)			
6B	Crushing and sieving (clause 12)	2	Carry out the crushing in accordance with clause 12 to obtain a powder of which 95 % passes through a 500 μ m sieve
7B	Determination of main characteristics (clause 13)	0,5	
8B	Thin-layer chromatography (clause 14)	0,05	
NOTE — There will remain 0,5 g of sample A and 1,45 g of sample B which can be used for further tests or for repeating certain analyses if necessary.			

Table 2 — Saffron in powder form: Order of test procedures

Order	Test procedure (sample: 5 g × 2 = 10 g)	Test sample g	Comments
1	Identification test (clause 5)	0,5	Do not continue with the analysis if the colorimetric analysis is not correct
2	Microscopic examination (clause 8)	0,01 to 0,02	
3	Separation of remaining test sample (4,48 g) into sample A (2,5 g) and sample B (1,98 g)		
	Sample A (2,5 g)		
4A	Determination of moisture and volatile matter content (clause 9)	2,5	Keep the sample for determination of total ash and acid-insoluble ash
5A	Determination of total ash (clause 10)	2 (approx.)	Sample remaining after 4A
6A	Determination of acid-insoluble ash (clause 11)		Sample remaining after 5A
	Sample B (1,98 g)		
4B	Sieving Crushing, if powder is > 500 µm (clause 12)	1,98	Verify that 95 % of the powder passes through a 500 µm sieve
5B	Determination of main characteristics (clause 13)	0,5	
6B	Thin-layer chromatography (clause 14)	0,05	
NOTE — There will remain 0,5 g of sample A and 1,43 g of sample B which can be used for further tests or for repeating certain analyses if necessary.			

5.2.3 Procedure

Spread out the test sample of saffron in filaments and examine it with the magnifying glass (5.2.2.1).

5.2.4 Interpretation of results

All the filaments shall belong to the plant *Crocus sativus* Linnaeus.

Reject the sample if vegetable matter other than that belonging to *Crocus sativus* Linnaeus is found.

5.3 Saffron in powder form**5.3.1 Principle**

Use of a colorimetric reaction.

5.3.2 Reagents

Use only reagents of recognized analytical grade and distilled or demineralized water or water of equivalent purity.

5.3.2.1 Sulfuric acid, of density 1,19 g/l.

5.3.2.2 Diphenylamine, not producing any coloured reaction with the sulfuric acid.

5.3.2.3 Diphenylamine solution, prepared as follows:

Add 0,1 g of diphenylamine (5.3.2.2) to 20 ml of sulfuric acid (5.3.2.1) and 4 ml of water.

5.3.3 Apparatus

5.3.3.1 Porcelain dish, with flat bottom.

5.4 Procedure

Take from sample B (see table 2) 0,5 g of saffron.

Place this test portion in the porcelain dish (5.3.3.1) containing the diphenylamine solution (5.3.2.3).

5.4.1 Interpretation of results

Pure saffron immediately produces a blue colour which rapidly turns reddish brown.

The blue colour shall persist in the presence of nitrates.